

# 4x4 HDMI Matrix 4K User's Guide





P/N:Matrix44-HD20

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# Important Safety Notices

 $Please \, read \, safety \, instructions \, carefully \, before \, installation \\ and \, operation.$ 

- Please pay close attention to all warnings and hints for this device
- Do not expose this unit to rain, heavy moisture, or liquid
- Do not put any items into the device or attempt to modify its operation
- Do not repair the device or open the enclosure without professional guidance to avoid electric shocks. Doing so may void your warranty
- Keep the product in a well-ventilated location to avoid damage from overheating
- Shut off power and make sure environment is safe before installation
- Do not plug the HDMI cables and IR cables in/out when the device is in use to avoid cable damage. Make sure they are plugged into the correct ports
- Use the included 5VDC power adapter only. Make sure the specification matches if using 3rd-party DC power adapters

# Introduction

The 4x4 HDBaseT Matrix 4K allows you to select and switch between any of the 4 HDMI source devices to display on any of the 4 HDMI outputs.

# Features

- Compliant with HDMI 2.0 and HDCP 2.2 specifications
- Bandwidth up to 18Gbps
- Supports resolutions up to 4K@60Hz YUV 4:4:4, 4K@60Hz YUV 4:2:0 HDR
- Supports Dolby True HD, DTS-HD master audio, and Dolby Atmos under copy EDID mode audio formats
- Smart EDID management allows you to select the output resolution to match the connected displays
- Supports firmware upgrade through USB port

# Installation Requirements

- HDMI source devices (DVD player, set top box, PC, etc.)
- HDMI displays (SDTV/Monitor, HDTV/Monitor, projector, etc.)
- HDMI cables (not included)

# **Package Contents**

- 1x 4x4 HDMI Matrix 4K
- 1x Mounting kit
- 1x IR remote control
- 1x IR Receiver cable
- 1x Software CD
- 1x Phoenix plug for RS232 control
- 1x Power adapter (5VDC)
- 1x User's guide

# **Product Layout**



**Figure 1: Front Panel Layout** 

No.	Name	Description				
1	IR Receiver	Receives IR signal from the included remote control				
2	Input Selector Button	Press the Selector button to choose the HDMI Input to view on the display device				
,						

2) Restore factory default settings: Select all outputs to Input 1, then press the Selector button of Output 3 and Output 4 simultaneously for 3 seconds.



Figure 2: Rear Panel Layout

No.	Name	Description
1	S/PDIF Out (1-4)	S/PDIF audio output connectors
2	IR Receiver	Connects to the included IR Receiver cable, receives signals from the included remote control
3	RS232	Connects to PC for RS232 software control or firmware update
4	USB	Firmware update
5	RJ45 Control	IP network control
6	Power Jack	Connects to the included power adapter
7	HDMI Input (1-4)	Connects to HDMI source device
8	HDMI Output (1-4)	Connects to HDMI display

# Hardware Installation

- 1. Power off all devices including your HDMI source(s) and HDMI display(s).
- 2. Connect your HDMI source devices to the Matrix 4K's HDMI Input connectors with HDMI cables (HDMI cables not included).
- 3. Connect your HDMI displays to the Matrix 4K's HDMI Output connectors with HDMI cables (HDMI cables not included).
- 4. Optional: Connect the included IR Receiver cable to the IR interface port. This connection is needed only if the front panel IR receiver window is not accessible.
- 5. Optional: Connect an AVR amplifier or speakers to the S/PDIF output ports.
- 6. Optional: Connect the Matrix 4K's RS232 socket and your PC's serial port or a CAT cable between the Matrix 4K's RJ45 port and router or PC's ethernet port. This connection is needed only if matrix device control using a PC is required.
- Plug the included power adapter into the Matrix 4K's Power Jack, then plug the power adapter into a reliable power outlet.
- 8. Power on all connected devices. The Matrix 4K is ready for use.

# **Application Diagram**

The application diagram shows the most typical input and output devices used with the 4x4 HDMI Matrix 4K.



**Figure 3: Application Diagram** 

# **Matrix Device Control**

#### Remote Control

Users can control the 4x4 HDMI Matrix 4K using the included IR remote. Point the remote control towards the built-in IR receiver window located on the front panel. An optional IR receiver cable is included to improve IR function in space constrained installations.



No.	Name	Description
1	Standby Mode	Press to place the Matrix into standby mode
2	Output (1-4) / Input (1- 4)	Output and Input selection button
3	All (Output)	Selects all outputs to one input
4	х	Cancels switching operation
5	РТР	Mirror all inputs and outputs

# RS232 Control

Connect the 4x4 HDMI Matrix 4K to a PC using an RS232 cable.

RS232 Pin Assignment

Matrix	Remote C	control Console
Assignment	PIN	Assignment
	1	NC
Tx	2	Rx
Rx	3	Tx
	4	NC
GND	5	GND
	6	NC
	7	NC
	8	NC
	9	NC

Software Control

Open the software on the included software CD and the control window appears as shown below.

In COM Setting, select the PC's COM port and click Connect.



#### **EDID** Config

Allows you to read and configure the EDID for each input.

Search	-	Sr	t Input HDMI	1		
	EDID Mode:	4K2K@60Hz [YC444]	-	Read	1	Apply
isconnect!		1080P				
	T HDR P	4K2K@30Hz 4K2K@60Hz (YC420)	n	○ 7.1 CH	○ 5.1 CH	@ 2.0 CH
ice Name		4K2K@50Hz (YC444) Copy From TV1				
HDMI2. ONatris		Copy From TV2	41.3			
	EDID Mode:	Copy From TV3 Copy From TV4		Read		Apply
Get		3D 🗆 30Bit 🗆 36Bit	F 48Bit	C 7.1 CH	C 5.1 CH	@ 2.0 CH
Edit						
		Si	t Input HDMI	9		
	CDID AL 1				1	
	EDID Mode:	4K2K@60Hz (YC420)	-	Read		Apply
		3D 🗆 308it 🗆 368it	<b>□ 48B</b> H	⊂ 7.1 CH	○ 5.1 CH	@ 2.0 CH
		Sr	t Input HDMI	4		
	EDID Mode:	4K2K@60Hz (YC420)	•	Read		Apply
	T HDB 💌	3D 🗆 30Bit 🗆 36Bit	<b>— 48B</b> it	C 7.1 CH	C 5.1 CH	@ 2.0 CH

#### IP Config

Allows you to read and configure the IP address. Select DHCP if you want the DHCP server to assign an IP address automatically.

OM Setting Pe ort: COMP - Pe	art Set   EDID Config [IF Con	fig Het	t Ca	nfig	Syr	et en l	onf	ig		
Search	IP Address Setting									
Disconnect!	Host IP Address:	192		168	2	1	<	168	Ī	
evice Name	Net Mask:	255		255		255		0		
+4HDNI2. ONatrin	Router IP Address:	192		168		1	•	0		
Got										
Edit	MAC Address: A4 : BA	: 82 : 2	9:7	1 : A	3			T DI	ICP	

Net Config

Allows you to configure the PC and Matrix in the same LAN and subnet.

Connect				

An option is to click IE to enter the browser.

ort: COMI 💉	Port Set   NDD Config   Dr Config   System Config   Current PC Information	
Connect	IP Address: 192 . 168 . 0 . 140 Perts: 5001 Disconnect	
svice Name	Host Device Information 6	
	IP Address: 192 . 168 . 0 . 173 Connect Search Device	
Get Edit	1->HP=192.168.0.173         Name>4*4HDMI2.0Matri         6           Set Device Number:         1	
	0	
	Reset	

System Config

Allows you to power On/Off, reset, and return the Matrix to its default settings.

COM Setting Port: COMS +	Port Set   EDID Config   IP	Config   Net Config (System Config	
Scarch Disconnect!	Command:		Apply
Device Name	Reset	Power Ctri On OFF	
Get	Default		

# **Command Control**

Open CommUart Assistant on the software CD.

#### COM Port Setting

Baud Rate:	115200 bps
Parity:	None
Data Bits:	8 bit
Stop Bits:	1 bit

#### Port Command Window

Enter the port command and click Send.



### <u>Commands</u>

Command	Function	Note
@W 04 00 01 02 03 #	PTP Function	Mirror all inputs and outputs
		(Ex. Input 1 to output 1, input 2 to output 2, etc)
@W 50 #	Reboot	
@W 51 #	Restore Factory Setting	
@W 0F 00 #	Standby	00: Standby Mode
@W 0F 00 #	Standby	01: Cancel "Standby Mode"

#### Select HDMI Input to HDMI Output

Command	Description
00	Output1
01	Output2
02	Output3
03	Output4
04	All Output
00	Input1
01	Input2
02	Input3
03	Input4

E.g: @W 00 00 #: Output 1 display Input1

Output 1

#### **EDID** Setting

#### @W XX AA BB #:

Parameter Description:

XX for configuration of "INPUT EDID"

Command	05	06	07	08
Description	Input1	Input2	Input3	Input4

AA for selecting "Video Mode"

Command	00	01	02	03
Description	1080P	4K2K_30	4K2K_60(YC420)	4K2K_60(YC444)

BB for selecting below function

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
HDR	48Bit	36Bit	30Bit	7.1CH	5.1CH	2CH	3D
1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0

"1" : choose the function, "0" : doesn't choose the function.

E.g: 11001001: HDR, 48Bit, 7.1CH, 3D

Chang Binary code "11001001" to hexadecimal format "C9".

E.g: @W 05 03 C9 #

The EDID of input 1 is: 4K2K\_60(YC444)、HDR、48Bit、7.1CH、3D.

# Web Control

#### Default IP Address

The default IP address of the Matrix 4K is 192.168.1.168.

### Change the IP address of our PC

- 1. Connect the Matrix 44 and your PC to the LAN.
- 2. Configure you PC as follows:

1. Click Start / Control Panel / Network and Sharing Center.

2. Click Change Adapter Settings.

3. Highlight the network adapter you want to use to connect to the device and click **Change settings of the connection**.

3. Highlight Internet Protocol Version 4 (TCP/IP/4).

🖗 Local Area Connection Properties 💽
Networking Sharing
Connect using:
Mintel(R) 82579V Gigabit Network Connection
Configure
Clent for Microsoft Networks
Microsoft Network Monitor 3 Driver
🗹 🜉 QoS Packet Scheduler
File and Printer Sharing for Microsoft Networks
Internet Protocol Version 6 (TCP/IPv6)
Internet Protocol Version 4 (TCP/IPv4)
Link-Layer Topology Discovery Mapper I/O Driver
Link-Layer Topology Discovery Responder
Instal Uninstal Properties
Description
TCP/IP version 6. The latest version of the internet protocol that provides communication across diverse interconnected networks.
OK Cancel

4. Click **Properties**.

0 0 0	Alternate Configuration				
this cap	n get IP settings assigned aut ability. Otherwise, you need appropriate IP settings.				
00	atan an IP address automatic	aly			
-O Us	e the following IP address: -				
IP ac	idress:			κ.	
Subr	iet mask:	14	4	$\sim$	
Defa	ult gateway:			÷	
00	otain DNS server address aut	cmatically			
() Us	e the following DNS server a	diresses:			
Prefi	erred DNS server:				
Alter	nate DNS server:		ì		
٣v	alidate settings upon exit			Ad	anced

5. Select **Use the following IP Address**, and then enter the IP address. **Note**: You can use any IP address in the range: 192.168.1.2 to 192.168.1.254 (excluding 192.168.1.168).

neral	
	red automatically if your network supports u need to ask your network administrator s.
🔿 Obtain an IP address aut	tomatically
O Use the following IP addr	ress:
IP address:	192.168.1.2
Subnet mask:	255.255.255.0
Default gateway:	
Obtain DNS server addre	na nuterationalu
<ul> <li>Use the following DNS se</li> </ul>	
Preferred DNS server:	
Alternate DNS server:	
Validate settings upon e	exit Advanced

- 6. Click **OK** to save the changes.
- 7. Click **Close** to exit.

#### Web Browser Control

Open your web browser and enter the Matrix 4K's IP address 192.168.1.168 into the address bar, and press **Enter**.

#### Port Setting

Assign any of the input devices to any of the outputs.

← → C (③ 192.168.1.168				<b>थि</b> ये
Port Set	EDID	Config		IP Config
	Port 5	set page		
Output1: Input 1	Input 2	Input 3	Input 4	4
Output2: Input 1	Input 2	Input 3	Input 4	4
Output3: Input 1	Input 2	Input 3	Input 4	4
Output4: Input 1	Input 2	Input 3	Input 4	4
Output All: Input 1	Input 2	Input 3	Input 4	1

# EDID Config Set the EDID for the HDMI Inputs.



#### <u>IP Config</u> Enter the network setting, and enable DHCP.



# **Firmware Update**

- 1. Connect the Matrix 4K to the PC using either the USB port or RS232 port.
- 2. Open the update software on the CD.
- 3. Click **Search**, choose the COM port of the PC, then click **Connect**.
- 4. When you see **S3RC**, click **Load FW File** to load the firmware.
- 5. Click **Update**. The update process will take up to 1 minute to complete.

UPDATE_FW	(D)	100	B-0-0 8-	1000	4	246	x
Vart config Port Sel: ( S3RLC	(S)	Search	3 Disconnecti Fieset				
D:\upgrad	ing firmware\MUX_AL	L_HDMI20(1).hex				Laad FW File Update	]0
×						Clear	

# Specifications

Operating Temperature	23° to 113° F (-5° to 45° C)
Storage Temperature	-4° to 140° F (-20° to 60° C)
Resolution	480p@60Hz, 576p@50Hz, 720p@60hz, 1080p@24Hz, 1080p@50Hz, 1080p@60Hz, 4K@24Hz, 4K@30Hz, 4K@60Hz YUV 4:2:0, 4K@60Hz YUV 4:4:4
HDCP Compliance	HDCP 2.2 and HDCP 1.4
Output Video	HDMI 2.0 and HDMI 1.4
Audio Format Supported	PCM, Dolby 5.1/7.1, DTS 5.1/7.1 digital audio, Dolby Atmos
RS232 Serial Port	3-pin terminal block connectors
Ethernet Port (IP Control)	RJ45, Female
IR Ext Port	3.5mm stereo jack
USB Port	Micro 5P, Female
Bandwidth	18 Gbps
Default IP	192.168.1.168
Rack Mountable	Rack ears included
Dimensions (L x W x H)	216 x 105 x 34 (mm)
Net Weight	0.72 Kg
Power Consumption	13 watts (Max)

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